



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit 2827
Examiner David A. Zarneke

In Re: Michael L. Scherbarth et al. ✓
Case: P1018
Serial No.: 09/755,480 ✓
Filed: January 5, 2001 ✓
Subject: Lead-frame Design Modification to Facilitate
Removal of Resist Tape from the Lead-frame

#5/A
Bmdt
J. McMillan
10/28/02
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To: The Commissioner of Patents and Trademarks
Washington, D.C. 20231

Dear Sir;

Amendment A

All of the claims standing for examination are reproduced below. There are no amendments to the claims herein made in the present response.

1. A lead frame apparatus for holding IC packages during IC package processing comprising:

a substantially flat thin strip of conductive material having substantially parallel sides and square ends forming the lead frame apparatus;

a strip of adhesive material adhered to one surface of lead frame apparatus, the overall dimensions of the strip substantially the same as the overall dimensions of the lead frame apparatus;

a plurality of die-attach pads arranged on the non-adhesive surface of the lead frame apparatus, the pads for receiving IC packages for encapsulation by molding; and

at least one geometric area of material alteration formed in the conductive material forming the lead frame, the area located substantially at either frame end, wherein a user accesses the strip of adhesive material through utilization of the material alteration for the purpose of removing the adhesive material from the surface of the lead frame.

2. The lead frame apparatus of claim 1, wherein the adhesive material is thermal resist tape.
3. The lead frame apparatus of claim 2, wherein the thermal resist tape after application to the frame is dimensionally equal to the overall dimensions of the frame.
4. The lead frame apparatus of claim 3, wherein the material alteration is a perforated tab.
5. The lead frame apparatus of claim 4, wherein the geometric area defining the material alteration is rectangular.
6. The lead frame apparatus of claim 5, wherein the material alteration spans the entire width of the lead frame.
7. The lead frame apparatus of claim 5, wherein etching before application of the adhesive material produces the material alteration.
8. The lead frame apparatus of claim 3, wherein the material alteration is characterized by an absence of material.

9. A lead frame apparatus of claim 8, wherein a material removal process performed before application of the adhesive material produces the material alteration.
10. The lead frame apparatus of claim 9, wherein the geometric area defining the material alteration is rectangular.
11. The lead frame apparatus of claim 9, wherein the geometric area defining the material alteration is annular.
12. The lead frame apparatus of claim 4, wherein the geometric area defining the material alteration is annular.
13. The lead frame apparatus of claim 4, wherein the material alteration is defined by an array of separated geometric areas.
14. The lead frame apparatus of claim 9, wherein the material alteration is defined by an array of separated geometric areas.
15. The lead frame apparatus of claim 1, wherein heat is used during the process of removing the adhesive material from the lead frame.
16. Lead frame apparatus of claim 15, wherein the heat source is a hotplate having a length dimension extending at least the overall length dimension of the lead frame.

Cancel claims 17-21

Remarks

The present amendment is responsive to the Office Action mailed into above-referenced case on June 26, 2002. Claims 1-21 are pending in the present application. A provisional election was made by applicant without traverse, per a telephone conversation dated April 2, 2002, to prosecute claims 1-16, drawn to a device, classified as Group I in class 257, subclass 666+, claims 17-21, drawn to a method and classified as Group II in class 438, subclass 106+, being withdrawn from further consideration by the Examiner in accordance with 37 CFR 1.142(b), as being drawn to a non-elected invention. Claims 1-16 are presented for examination. Claims 1-16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Hirschi, (Swiss patent No. 672624), hereinafter Hirschi.

Applicant has carefully reviewed the prior art presented by the Examiner, and the Examiner's rejections and arguments. In response to the Examiner's rejection of the claims, applicant herein provides facts and argument to establish unarguably that the remaining claims distinguish over the prior art as cited and applied by the Examiner.

The Examiner states that applicant's admitted prior art teaches a lead frame apparatus comprising a flat thin conductive material for forming a lead frame, a strip of adhesive material attached to one side of the lead frame and having the same dimensions as the lead frame, and a plurality of die-attach pads arranged on the side opposite of the adhesive material for receiving IC packages for encapsulation. The Examiner further states that applicant's admitted prior art fails to teach at least one geometric area of alteration located at either frame end to enable a user easy access to the adhesive material for the purpose of removing it from the lead frame.

The Examiner further states that, with reference to figures 1 and 2 of the prior art presented, Hirschi teaches a coffee cream container comprising a tab (5) extending from the container having a perforated severing line (7), wherein a cover portion (4) is removed from the container portion (2) by breaking the tab along the perforated severing line and peeling off the cover.

The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to use the perforated severing line of Hirschi in applicant's admitted prior art, because cover removal using this method makes gaining entry into the container quicker and easier.

In response to the Examiner's above statement, applicant respectfully points out to the Examiner that the invention of the present application is in the field of integrated circuit (IC) manufacturing, pertaining in particular to apparatus and methods for modifying the narrow end(s) of a lead frame to facilitate successful tape removal during IC processing. The invention of Hirschi, on the other hand, is not in any way related to the field of applicant's invention. Hirschi teaches a method for accessing a cover on a container, for the purpose of peeling back the cover from the container for allowing access to the inside of the container. The field of Hirschi is certainly not analogous art. Applicant points out to the Examiner that the purpose of applicant's invention is not for gaining entry into a container, as is taught in Hirschi, rather; the purpose of applicant's invention is to enable simple physical access to the edge of the thermal-resist tape applied to a lead frame of an IC package. Such a lead frame apparatus, as is claimed by applicant, for holding IC packages during IC package processing, enables easy and secure access to the tape in order to enable safe separation of the tape from the lead frame, not for gaining entry into a container, as is taught in the non-analogous art by Hirschi.

Applicant argues that it certainly would not have been obvious to a worker of ordinary skill in the art of applicant's invention to use the perforated severing line of Hirschi to enable simple physical access to the

edge of the thermal-resist tape applied to a lead frame of an IC package, and it certainly would not have been obvious for a worker of ordinary skill in the art of applicant's invention to research how to open a coffee cream container.

Applicant believes that, in view of applicant's facts and arguments presented above, applicant's claim 1 in its present form is clearly and unarguably patentable over the admitted prior art in view of Hirschi. Claims 2-16 are therefore patentable on their own merits, or at least as depended from a patentable claim. It is therefore respectfully requested that this application be reconsidered, the claims be allowed, and that this case be passed quickly to issue.

If there are any time extensions needed beyond any extension specifically requested with this amendment, such extension of time is hereby requested. If there are any fees due beyond any fees paid with this amendment, authorization is given to deduct such fees from deposit account 50-0534.

Version With Markings to Show Changes Made

There are no amendments to the claims or specification herein made in the present response.

Respectfully Submitted,

Michael L. Scherbarth et al.

by

A handwritten signature in black ink, appearing to read 'Donald R. Boys', written over a horizontal line.

Donald R. Boys

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